

## CLAIMS

What is claimed is:

1. A method for use in determining a pilot-to-data power ratio, comprising:
  - 5 receiving a data symbol having a data amplitude;
  - receiving a pilot signal having a pilot amplitude;
  - reverse training an automatic gain based on the data amplitude and the pilot amplitude; and
  - 10 determining a pilot-to-data power ratio according to the reverse training of the automatic gain.
2. The method of claim 1, further comprising:
  - compensating for channel fading in the data symbol providing a fading compensated data symbol prior to reverse training such that the reverse training is
  - 15 based at least in part on the fading compensated data symbol.
3. The method of claim 2, wherein the compensating for channel fading comprises:
  - providing for channel correction on the data symbol;
  - 20 providing for channel correction on the pilot signal; and
  - dividing the channel corrected data symbol by the channel corrected pilot signal providing the fading compensated data symbol.
4. The method of claim 2, further comprising:
  - 25 multiplying the fading compensated data symbol by the automatic gain and producing a data symbol.
5. The method of claim 1, wherein the determining the pilot-to-data power ratio comprises determining a maximum pilot-to-data ratio and selecting the
- 30 maximum pilot-to-data ratio as the pilot-to-data power ratio.
6. The method of claim 5, wherein the determining the pilot-to-data power ratio comprises filtering the pilot-to-data ratio prior to the determining the maximum pilot-to-data ratio and the selecting the maximum pilot-to-data ratio.

7. A method for use in providing wireless communication, comprising:  
receiving a channel faded data signal;  
removing channel fading from the channel faded data signal producing a  
5 fading compensated signal;  
reverse training an adjustable gain according to the fading compensated  
signal;  
generating a pilot-to-data ratio based on the reverse training of the adjusted  
gain.

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8. The method of claim 7, wherein the generating the pilot-to-data ratio  
comprises:

monitoring the adjustable gain over a predefined period of time; and  
defining a maximum adjustable gain detected during the predefined period  
15 as the pilot-to-data ratio.

9. The method of claim 8, wherein the generating the pilot-to-data ratio  
further comprises filtering the adjustable gain prior to the monitoring of the adjustable  
gain.

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10. The method of claim 8, further comprising:  
eliminating adjustable gains that exceed predefined thresholds; and  
the defining a maximum adjustable gain as the pilot-to-data ratio  
comprises ignoring the adjustable gains eliminated.

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11. The method of claim 7, further comprising:  
applying the adjustable gain to the data to pilot signal; and  
retrieving a data signal.

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12. The method of claim 7, further comprising:  
receiving a channel faded pilot signal;  
providing channel correction comprises:

determining a complex conjugate of a channel estimate and applying the complex conjugate to the channel faded pilot signal producing a conjugate adjusted pilot signal;

5 multiplying the channel faded data signal by the conjugate adjusted pilot signal producing a channel corrected data signal; and

multiplying the pilot signal by the conjugate adjusted pilot signal producing a channel corrected pilot signal; and

dividing the channel corrected data signal by the channel corrected pilot signal producing the fading compensated signal.

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13. The method of claim 7, further comprising:

receiving a channel faded data signal over a plurality of communication fingers;

15 receiving a channel faded pilot signal over a plurality of communication fingers;

determining a complex conjugate of a channel estimate for each finger and applying the complex conjugate to the respective channel faded pilot signal for each finger producing a conjugate adjusted pilot signal for each finger;

20 multiplying the channel faded data signal for each finger by the respective conjugate adjusted pilot signal providing a channel corrected data signal for each finger;

multiplying the channel faded pilot signal for each finger by the respective conjugate adjusted pilot signal providing a channel corrected pilot signal for each finger;

25 summing the channel corrected pilot signals for each finger producing a summed channel corrected pilot signal;

summing the channel corrected data signals for each finger producing a summed channel corrected data signal; and

30 wherein the removing channel fading from the channel faded data signal comprises dividing the summed channel corrected data signal by the summed channel corrected pilot signal producing the fading compensated signal.

14. The method of claim 13, further comprising:

providing channel estimate correction to the channel faded pilot signal  
producing a channel adjusted pilot signal prior to the determining the complex  
conjugate such that the multiplying the channel faded pilot signal by the complex  
5 conjugate comprises multiplying the channel adjusted pilot signal by a complex  
conjugate.

15. An apparatus for use in providing wireless communication,  
comprising:

10 a first input receiving a channel faded data symbol;  
a channel fading removal device configured to receive the channel faded  
data symbol and to compensate for the channel fading producing a fading  
compensated signal;  
an automatic gain control (AGC) device coupled with the channel fading  
15 removal device, wherein the AGC device receives the fading compensated signal and  
generates a pilot-to-data power ratio proportional to the fading compensated signal.

16. The apparatus of claim 15, further comprising:

20 a second input receiving a channel faded pilot signal; and  
a channel correction compensator coupled with the first and second inputs  
to receive the channel faded data symbol and the channel faded pilot signal, such that  
the channel correction compensator provides channel correction to the channel faded  
data symbol and channel faded pilot signal, wherein the channel fading removal  
device received a channel corrected data symbol and a channel corrected pilot  
25 symbol.

17. The apparatus of claim 15, further comprising:

30 a maximum detector coupled with the AGC device, wherein the maximum  
detector detects a maximum pilot-to-data power ratio and selects the maximum pilot-  
to-data power ratio as the pilot-to-data power ratio.

18. The apparatus of claim 15, further comprising:
  - a multiplier coupled with the channel fading removal device and the AGC device, wherein the multiplier receives the fading compensated signal and a gain generated by the AGC device such that the gain is proportional to the fading compensated signal, and multiplies the fading compensated signal by the gain to retrieve a data symbol.
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